immense varieties of limestone, there are none capable of withstanding the corroding hand of Time in this country over a few centuries, and most of them rapidly disappear; it is only when carbon is in excess, that the stone is marked with a lengthened durability. Still it is to be observed that, while they continue in their natural and undisturbed state, they appear to be indestructible, presenting their vast precipitous fronts even to the storm and the tempest for ages, ere they yield inch by inch to its fury; the causes of which are, the apparent state of rest in which they exist; their absorbing pores are ever filled with moisture, which is the clue by which heat finds its way into their remotest parts, and the medium by which uniformity of temperature is preserved. But when quarried, the stone becomes the subject of incessant action and reaction; it is affected by heat and cold; its moisture is continually received, and as continually withdrawn; and its spongy texture is free to admit elastic fluid bodies inimical to its compound structure. It is the same with the common cements of the day, they are acted upon in the same manner, and too often by soluble salts, with which they are unthinkingly united, and the inevitable consequences are rapid and uniform decay.

Chemists unhesitatingly affirm that the induration of cements is caused by the absorption of carbonic acid; but, although I stand alone in this respect, I most decidedly differ with them in an opinion which is contradictory to existing phenomena; for the supply derivable from the atmosphere must, in many cases, be infinitely short of the demand. On the other hand it is evident that, on the introduction of water, chemical action is generated, and a general interchange of bodies takes place; internal action continuing until the carbon, the lime, and the silica acquire a reciprocal relationship to each other. I should be far more inclined to believe that, on the decomposition of the water, while the oxygen is absorbed by the lime, the hydrogen attacks the gelatinous and siliceous matter, causes it to expand, and becomes in this state firmly united with the lime by the force of affinity.

In tropical countries the most agreeable habitations are those which are built of very thick massive stones, the least so are those built of wood; the black basalts in particular being non-conductors of heat, absorbing very little moisture, and exceedingly durable, are universally employed by the natives in the construction of their temples; and the massive structures still existing in Egypt, demonstrate that the ancients were well acquainted with the nature of building-material, always choosing that which possessed the least absorbing power, or otherwise employing much larger blocks of the lighter and more spongy material. In this country the latter is most desirable, because it preserves a more even temperature throughout the year.

(To be continued.)

THE NATURE OF DESIGN.

A Paper read at the meetings of the Decorative Art Society, March 13th and 27th.

BY MR. CRACE, V.P., MEMBER OF THE INSTITUTE OF FINE ARTS.

(Continued from p. 439.)

With a few exceptions our pattern drawers or designers have not been educated, nor have they taken any comprehensive view of Art. Design has, in fact, been understood neither by the manufacturer, the public, nor the designer himself, and the extent of our national as well as individual deficiencies, in every thing approaching to systematic information or education in Art, subsequently to be applied to manufacture, can at present alone be understood by comparison with the continental nations. The steady but constant improvement and extension of their manufactures will be found to be progressive with their schools of Design.

The increase of our population causes a greater competition for employment, rendering it every man's business to consider by what means additional trade can be obtained; bearing in mind the alterations which have taken place abroad, it would be exceedingly interesting to consider the probable extension of the present, and what additional occupations would arise in our own country, were the *entire people, wealthy and poor*, as familiar with Fine Art, as they are upon the Continent. Our present improvements are chiefly those of actual utility, taste being secondary. The application of geometrical design has greatly added to the beauty, while it has also effected a great saving of material in the frame-work of our engines and machinery generally. Without doubt, elaborate work in beautiful design might be added to all our manufactured metallic and other substances, which would cause an immense increase of employment. We possess knowledge, and specimens of very fine examples in wrought iron work and brass screen work, as Henry Seventh's tomb. We could consume brass furniture mountings to a great extent; bronze architectural ornaments, tazzas, vases, figures, &c., for the production of which the French are so justly famous; fine iron castings, as of Prussia, France, or Belgium. Our wood carving is very deficient, and our decorative painting has now passed into the hands of foreign artisans. Nothing would prevent our silk manufacture equalling the finest efforts of Lyons, were our weavers and artists educated. Carpets the same, together with an immense list of products from the loom, tapestries, &c. Why could not we, instead of importing, make watches as Geneva? and also *watch-glasses*? Their great skill and beautifully applied design originates but in a practical school of design. A similar source supplies the French with their superior distemper printing colours, by which, and their botanical knowledge, they wholly eclipse our paper-hangings. Scientific knowledge of colouring is as visible in the work-room of their milliners as in their manufactures. Are we not as capable of transplanting to our land the light and easily followed trade of artificial flower-making as the French, who took it from Italy? Only instruct our people in botany as they did. Consider the immense field that is open for lace-work; I know of nothing upon which such distinctive varieties of magnificent design have in olden time been lavished, and never was there a better opening for its reproduction than at the present time. Foreign jewellery, and goldsmith's work (often enriched by enamels), is daily growing in fashion. Abroad, you will see females employed in gem engraving, and other light works of fine art. Look to the thousands of cameos brought from Italy; can it be said we are unequal to their production?

The continental cabinet-work is inferior in quality, but its ornaments display all the taste resulting from educated design; and the elegant arrangements of French upholstery have become almost proverbial. These examples might be extended, but my purpose is answered when I draw attention to the advantages of fixing upon our already substantial manufactures, the profitable intimacy of the entire nation with fine art.

Superior elegance of form is perfectly reconcilable with bare utility, and is exemplified in numerous instances; from the most refined works of the antique designing, down to their commonest domestic utensils and implements.

When a people become familiar with the exceeding beauty of Art, they require its application to every article of general use, whether for elegant luxury, or simple utility. This causes an application of elaborate workmanship, creating innumerable trades. Art is cheap, all can enjoy it, and while it affords pleasure to all, supports by its lighter employments thousands who might otherwise be in indigence.

Practical institutions for instruction are the first grand and special object; give the people opportunities of seeing the most beautiful objects of art in the particular branch they may follow—gradually form collections of models of the best styles of furniture, and every other requisite manufacture—and have able instructors to teach the principles by which they are produced. This, in addition to accessible collections of celebrated buildings, is the obvious and certain mode of universally extending taste and a knowledge of the arts among the people, and of causing their application to manufactures.

With such statements, coupled with a foreign rivalry, in active operation, immediately and particularly affecting those who may be expected to become members of this society, I submit we are entitled rigidly to inquire into the measures lately pursued for educating or diffusing a knowledge of design and its purposes among our own people.

Since the School of Design was established eight years ago, I have had frequent opportunities of being acquainted with its management, and at various intervals have been in communication with members of the council. I have, throughout, taken a different view of the plan desirable to be pursued, from that of those gentlemen, or rather of the majority, for the council has been divided in opinion upon the point. The school has had ample time to produce designers of its own formation, and to have laid a solid foundation for a well-digested plan of education; but that the various plans successively adopted have failed, none can deny—and persons capable of forming a sound judgment consider the system unsuited to produce efficient draughtsmen—and I take the liberty of challenging the school to produce one real designer of its own education. Is it not, therefore, fair to ask the reason?

I attribute no blame to the gentlemen of the council; they have acted to the best of their judgment, and encountered many inconveniences, for which we are greatly their debtors; but these gentlemen being only theoretically and limitedly acquainted with design, its practical diversified requirements cannot possibly be known to them. They therefore commit the first grand error in choosing an artist, portrait or landscape painter, as the sole director, a class of gentlemen confessedly not men of business, and certainly not familiar with practical design. It is a separate question whether an artist should or should not be at the head of the institution, but I am perfectly certain that unless talented designers of varied experience, and familiar with trade and foreign manufactures consumed in England, be associated with the institution, it is impossible for the council to confer the benefits they propose.

My own business is wholly with design, and I have allowed no opportunity to escape for discussing this topic with gentlemen and with manufacturers, and each, without exception, has admitted the plain common sense of my position.

There are persons who have a management in the first class cabinet, upholstery, and decorative houses of London, who know more about the practical requisites for teaching design than all the school put together. These persons are few in number, and possess advantages no other class of men can possess; it is their immediate business to examine thousands of designs that are constantly recurring, for their decorations and furnishings, in ornamental works, in chintzes and silks, carpets, floor cloths, furniture, iron, brass and marble, &c.; every description of design, foreign and English, is constantly requiring their notice, and it is not unusual for noblemen to take their opinion upon a choice of lamps, bronzes, plate, and various et ceteras.

When I am called upon to decorate and furnish, say an entrance vestibule, dining room and drawing room, observe the information upon design requisite:—The general plan has first to be determined; it may be a modern built London house, capable of receiving the Greek, Roman, Italian, French, or even Elizabethan styles—an intimate knowledge of each style, its leading characteristics and treatment, the ornaments and furniture of the respective period is perfectly essential, otherwise I cannot successfully direct my customer's choice; and when determined, there remains the practical acquaintance with home and foreign manufactures, my immediate province being to point out superior products of either. The floor of the hall may be laid in plain or patterned marbles, with tiles or tesseræ, plain oak or inlaid woods. The walls and ceiling are to receive due and respective embellishment; and though little furniture is required, it varies from the Roman eagle and slab to the bracket. The dining room, even if plain, can have a distinctive character marked in its frieze, cornice and ceiling, its chimney grate and leading pieces of furniture, the carpet, and the mode of fitting up the windows, in which the wide diversity of materials for curtains, resulting from the efforts of many manufactures, present me with every quality of design. The drawing room usually demands

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